

TCEQ Interoffice Memorandum

To: File

Thru: Johnny Cosgrove, P.E., Team leader, Dam Safety Section

From: Robert Calderon, P.E. *RC* and Lisa Bishop, P.E. *LB*

Date: September 13, 2017

Subject: TX07087 – Armadillo Drive Dam

TCEQ Dam Safety was notified by the owner (Jon Gustafson) of damage to the Armadillo Drive Dam due to a storm event (Hurricane/Tropical Storm Harvey) the week of August 26th, 2017. The owner requested a site visit and assessment of the structure. Dam Safety staff visited the dam on September 13, 2017 to observe the dam and assess the storm damage.

The owner was not present during the inspection but one of the downstream neighbors stated that the storm event was approximately 30 inches of rain over a 3 day period and that water did overtop the embankment. There was evidence of overtopping along the edge of the right side of the dam (grass was matted and minor erosion was noted along a path from the dam to the access gate). The owner also stated that overtopping occurred along the left edge of the embankment but no clear evidence was observed as the area had tall grass and shrubs and no erosion was noted. Lastly, the neighbor immediately downstream of the dam, noted that during the storm floodwaters were out of the natural channel banks (with floodwater approximately 200-ft wide). However, the floodwaters did not encroach upon the downstream residence.

The following observations were noted as shown in the attached figure and photos: matted grass and minor erosion indicated overtopping at the left end of the embankment along the access path to the street downstream of the dam. A sinkhole approximately 1-ft in diameter and 2.5-ft deep was observed near the midpoint of the crest (was located left of and not in line with the service spillway pipe). The owner indicated another sinkhole occurred but was not observed during this inspection. Based on the debris line at a nearby picket fence, the water surface appeared to crest at about 1-ft over the top of the dam (**See Photos 1-8**). At the time of the inspection, the lake level was observed to be at the approximate elevation of the service spillway drop inlet (normal level). It appeared that a wooden cover had been weighted down over the top of the service spillway inlet (possibly to keep debris from entering the pipe inlet). The service spillway outlet was not closely observed as this area was overgrown. No damage was noted to the emergency spillway, or roadway and culvert located approximately 200-ft downstream of the dam.

The dam was previously inspected by TCEQ Dam Safety On July 1, 2015 and was found in poor overall condition. Based on that inspection and all other dam safety records, the height of the dam is 13 feet with an estimated normal capacity of the reservoir of 36 acre-feet and a maximum capacity of 47 acre-feet. It was noted during this assessment that dam improvements had been made since the last inspection which consisted of clearing of the upstream slope and removal of large beaver dens around the upstream embankment near the spillway drop inlet.

Lastly, as was discussed with the owner during phone conversations, the dam is currently exempt from Dam Safety inspections and regulations. Per House Bill 2694 from the 82nd Texas Legislative Session, dams meeting the 5 criteria noted below will be exempted from regulation through the Dam Safety Program. Those criteria are summarized as follows:

1. Dam is privately owned,
2. Dam has a maximum capacity of less than 500 ac-ft,
3. Dam has a hazard classification of low or significant,
4. Dam is located outside a city limit, and
5. Dam located in a county with population less than 350,000 as of 2010 census.

Based on these criteria, the Armadillo Drive Dam does meet the qualifications for exempt status. The dam owner is still required to maintain the dam in safe condition and the exempt status may be changed if downstream conditions change which would warrant an increase of the hazard classification to high. However, at this time, no further inspections of the dam will be scheduled through the Dam Safety program.

Figure 1—Aerial View (2016)
Armadillo Drive Dam - 10' Contours





Photo 1: View of crest looking northeast. Note the circled area is where a rod was placed noting the small sinkhole.



Photo 2: Close up view of the sinkhole on the crest near the mid-section of the dam. The sinkhole was estimated at 1-ft wide by approximately 2.5-ft deep.



Photo 3 View of the reservoir and upstream slope at the right end of the dam looking northeast.



Photo 4: View of the access path (right side of the dam) from the toe of the downstream slope looking back toward the road (South). Note the evidence of overtopping at this location as there is some matting of the grass and erosion.



Photo 5: View of a picket fence along the right side of the dam looking southwest. Note the debris line along the fence indicates the water level crested at about 1-ft above the top of dam.



Photo 6: View of the service spillway inlet looking north with what appears to be a weighted wooden cover over the inlet.



Photo 7: View of the culvert at Armadillo Drive (approximately 200-ft downstream of the dam) looking downstream (South). No damage, sediment, or significant erosion was noted.



Photo 8: Panoramic view of the downstream property looking south. Note the main channel is highlighted by the dashed arrow in this photo. Per the downstream neighbor, the floodwaters extended about 200-ft wide but did not impact the residence (just to the right of the photo).